c) contacting at least a portion of said volatilized volume with a sensor element, wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and

d) monitoring a signal from said sensor element as a function of time.

Attached hereto are a marked-up version of the Claims and a clean version of the Claims, incorporating the amendments made herein. The attached pages are captioned "Claims With Markings to Show Amendments Made" and "Clean Version of All Claims," respectively.

REMARKS

This Amendment and Response to Non-Final Office Action is being submitted in response to the non-final Office Action dated October 23, 2002 (Paper No. 8). Claims 1-45 are pending in the Application. Claims 22-36 are withdrawn from consideration. Claims 1, 3-5, 12, 13, 16-20, 37-39, 41, 43 and 45 stand rejected under 35 USC 102(b) as being anticipated by "Development of an Electronic Nose" by Barisci et al. Claims 14, 15 and 40 stand rejected under 35 USC 103(a) as being unpatentable over Barisci et al. Claims 2, 6-11, 21, 42 and 44 stand rejected under 35 USC 103(a) as being unpatentable over Barisci et al. in view of Mansky et al. (U.S. Patent No. 6,438,497).

In response to these rejections, Claim 37 has been amended to further clarify the subject matter of the present invention. This amendment is fully supported in the specification and drawings of the Application.

Rejection of Claims 1, 3-5, 12, 13, 16-20, 37-39, 41, 43 and 45 Under 35 USC 102(b):

Claims 1, 3-5, 12, 13, 16-20, 37-39, 41, 43 and 45 stand rejected under 35 USC 102(b) as being anticipated by "Development of an Electronic Nose" by Barisci et al. Specifically, Examiner states that...

Barisci teaches a system for detection of volatile compounds which relies on a change in electrical resistance that occurs when a conducting polymer sensing element is exposed to a gaseous sample. Analyte vapors are generated by bubbling a nitrogen gas stream through a volatile liquid. A continuous flow of saturated gas is produced with the vapor concentration being related to the vapor pressure of the liquid. The stream is directed to a sensor array of up to eight sensors (page 169). The detection system comprises an array of sensors, hardware and a computer that facilitates the analysis and quantification of the volatile material (page 164).

The methods of the present invention, however, differ significantly from those disclosed in Barisci et al. The methods of the present invention involve introducing and volatilizing a multi-component liquid sample for analysis. Because each component of the sample volatilizes at a different rate, each is exposed to the single sensor utilized at a different time. Accordingly, the single sensor and the associated signals may be used to analyze each of the components by analyzing the signals as a function of time. Barisci et al., on the other hand, utilizes an array of sensors (wherein each sensor is essentially associated with one component) that are simultaneously exposed to each of the components. No temporal factors are utilized. This important difference is reflected in independent Claims 1 and 37.

Barisci can be a single sensor

Fig. 2 ? Fig. 4

Claim 37 does not preclude measuring simultaneously

Claim 1 recites, in relevant part, "monitoring a signal from said sensor element wherein said signal comprises the response of said sensor to a temporally-determined variation in the concentration of said vapor at said sensor surface." Likewise, Claim 37 recites, in relevant part, "monitoring a signal from said sensor element as a function of time."

Therefore, Applicant submits that Claims 1 and 37 recite elements and/or limitations not disclosed by Barisci et al. and respectfully requests that the rejection of these claims under 35 USC 102(b) be withdrawn. Because Claims 3-5, 12, 13, 16-20, 37-

39, 41, 43 and 45 are dependent from independent Claims 1 and 37, Applicant requests that the rejection of these claims under 35 USC 102(b) also be withdrawn.

Rejection of Claims 14, 15 and 40 Under 35 USC 103(a):

Claims 14, 15 and 40 stand rejected under 35 USC 103(a) as being unpatentable over Barisci et al.

Because Claims 14, 15 and 40 are dependent from independent Claims 1 and 37, and because Claims 1 and 37 recite elements and/or limitations not taught or suggested by Barisci et al., Applicant requests that the rejection of these claims under 35 USC 103(a) be withdrawn.

Rejection of Claims 2, 6-11, 21, 42 and 44 Under 35 USC 103(a):

Claims 2, 6-11, 21, 42 and 44 stand rejected under 35 USC 103(a) as being unpatentable over Barisci et al. in view of Mansky et al. (U.S. Patent No. 6,438,497).

Like Claims 1 and 37, independent Claim 21 recites, in relevant part, "monitoring a measured property of said chemically sensitive film as a function of time."

Therefore, Applicant submits that Claim 21 recites elements and/or limitations not taught or suggested by Barisci et al. or Mansky et al. and respectfully requests that the rejection of this claim under 35 USC 103(a) be withdrawn. Because Claims 2, 6-11, 42 and 44 are dependent from independent Claims 1, 21 and 37, Applicant requests that the rejection of these claims under 35 USC 103(a) also be withdrawn.

CONCLUSION

Applicant would like to thank Examiner for the attention and consideration accorded the present Application. In light of the foregoing amendments and remarks,

Applicant requests that Examiner reconsider this Application and allow Claims 1-21 and 37-45. Should Examiner have any questions, or should any further action be required to place the Application in better form for allowance, Examiner is encouraged to contact undersigned Counsel at the telephone number, address, or email address provided below.

Respectfully submitted,

Date: January 23, 2003

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CLAIMS WITH MARKINGS TO SHOW AMENDMENTS MADE

In accordance with 37 CFR 1.121(c)(1), the following version of the Claims, as rewritten by the foregoing amendments, shows the changes made relative to previous versions of the Claims. Material added is shown in underlined text and material deleted is shown in [brackets].

1. A method for rapidly screening volatile substances in a sample, said method comprising the steps of:

a) introducing a volume of said sample into a vapor delivery line;

b) volatilizing at least a portion of said volume as said volume is carried through said vapor delivery line;

c) contacting at least a portion of said volatilized volume with a sensor element; wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and

d) monitoring a signal from said sensor element wherein said signal comprises the response of said sensor to a temporally-determined variation in the concentration of said vapor at said sensor surface.

2. The method of claim 1, wherein said sensor element is an optical sensor element.

3. The method of claim 1, wherein said sensor element is an electrochemical sensor element.

4. The method of claim 1, wherein said sensor element comprises a semiconductor.

5. The method of claim 1, wherein said sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of said sensor element.

6. The method of claim 1, wherein said sensor element comprises a quartz crystal.

7. The method of claim 5, wherein said sensor element is coated with a hard-soft block elastomer.

8. The method of claim 7, wherein said sensor element is coated with a silicone polyimide.

9. The method of claim 7, wherein said sensor element is coated with a block dimethylsiloxane-carbonate copolymer.

10. The method of claim 5, wherein said sensor element is coated with an amorphous fluoropolymer.

11. The method of claim 10, wherein said sensor element is coated with a random copolymer of tetrafluoroethylene and perfluoro-2,2-dimethyl-1,3-dioxole.

12. The method of claim 1, wherein step c) comprises contacting at least a portion of said volatilized volume with an array of sensor elements.

13. The method of claim 1, wherein said volume is carried through said vapor delivery line by an inert carrier gas.

14. The method of claim 13, wherein said inert carrier gas is flowing through said vapor delivery line at a rate of between about 1 mL/min and about 1000 mL/min.

15. The method of claim 14, wherein said inert carrier gas is flowing through said vapor delivery line at a rate of between about 150 mL/min and about 500 mL/min.

16. The method of claim 5, wherein said signal from said sensor element represents a measured property of said chemically sensitive film.

17. The method of claim 1, wherein said signal from said sensor element is monitored as a function of time.

18. The method of claim 17, wherein said signal is monitored with at least one frequency counter to produce data.

19. The method of claim 18, wherein said data are stored in a computer.

20. The method of claim 1, further comprising the step of controlling the flow of said inert carrier gas through said vapor delivery line with flow controllers in communication with a computer.

21. A method for rapidly screening volatile substances in a sample, said method comprising the steps of:

a) introducing a volume of said sample into a vapor delivery line;

b) volatilizing at least a portion of said volume as said volume is carried through said vapor delivery line;

c) contacting at least a portion of said volatilized volume with a sensor element comprising a quartz crystal and a chemically sensitive film proximate the surface of said crystal, wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and

d) monitoring a measured property of said chemically sensitive film as a function of time.

37. (Amended) A method for rapidly screening volatile substances in a sample, the method comprising the steps of:

a) introducing a volume of [the] <u>said</u> sample into a vapor delivery line;

b) volatilizing at least a portion of said volume as said volume is

carried through said vapor delivery line;

c) contacting at least a portion of said volatilized volume with a sensor element, wherein said volume does not contact a substantially sorbent material before contacting said sensor element; and

d) monitoring a signal from [the] said sensor element as a function of time.

38. The method of claim 37, wherein said volume is carried through said vapor delivery line by an analyte-free carrier gas.

39. The method of claim 38, further comprising the step of controlling the flow of said analyte-free carrier through said vapor delivery line with flow controllers in communication with a computer.

40. The method of claim 37, further comprising purging the system to remove any remaining analyte vapors prior to introduction of a second sample into said vapor delivery line.

41. The method of claim 37, wherein the sensor element is coated with a chemically sensitive material to form a chemically sensitive film proximate the surface of the sensor element.

42. The method of claim 37, wherein said sensor comprises a quartz crystal.

43. The method of claim 37, wherein step (c) comprises contacting at least a portion of said volatilized volume with an array of sensor elements.

44. The method of claim 37, wherein said sensor element is an optical element.

45. The method of claim 37, wherein said sensor element is an electrochemical element.